Spread of the Cane toad *Bufo marinus* to San Cristobal (Makira) Island, Solomon Islands

T.E. Heinsohn

Department of Archaeology and Natural History, Research School of Pacific and Asian Studies,
Australian National University, ACT 0200, Australia.

Email: tomh@coombs.anu.edu.au.

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Introduction

During the middle decades of the 20th century the cane toad *Bufo marinus*, a native of South and Central America, was widely introduced in the Pacific in an often-misguided attempt at biological control of various agricultural insect pests (Easteal 1981; Easteal and Floyd 1986; Lever 1994, 2001, 2003; ISSG 2006). In the Australo-Melanesian region, it is recorded to have been introduced to northeastern Australia in 1935, Fiji in 1936, New Britain in 1937, the Papua New Guinea mainland in circa 1937, New Ireland in 1939 and the Solomon Islands in 1940 (Simmonds 1937; Lever 1945; Tanner 1951; Brown 1952; Brongersma 1958; Menzies 1975, 1996, 2006; Pippet 1975; Zug *et al*. 1975; Easteal 1981; Tyler 1989; Lever 2001, 2003). After the Pacific theatre of the Second World War spread to Melanesia in early 1942, it is believed that the toad was further aided in its spread through stowaways, and in some cases deliberate transportations, in both Japanese and Allied military vessels and cargo. For example, it may have arrived on Nissan Island to the northwest of Bougainville, North Solomons Province, Papua New Guinea, through the agency of an Allied force that established a major base there (Menzies 1975, 2006; Lever 2001, 2003). Furthermore, *B. marinus* as a highly invasive species with a preference for tropical and subtropical lowlands, and especially disturbed anthropogenic habitats, continues to advance its range. In addition to its well-documented spread across northern Australia, it continues to expand its range on the New Guinea mainland, on some fringing continental islands in Southeast Papua, and on various oceanic landmasses in the Bismarck Archipelago and Solomon Islands (Menzies 1975, 1996, 2006; Zug *et al.*1975; Easteal 1981; Easteal and Floyd 1986; Tyler 1989; Lever 2001, 2003).

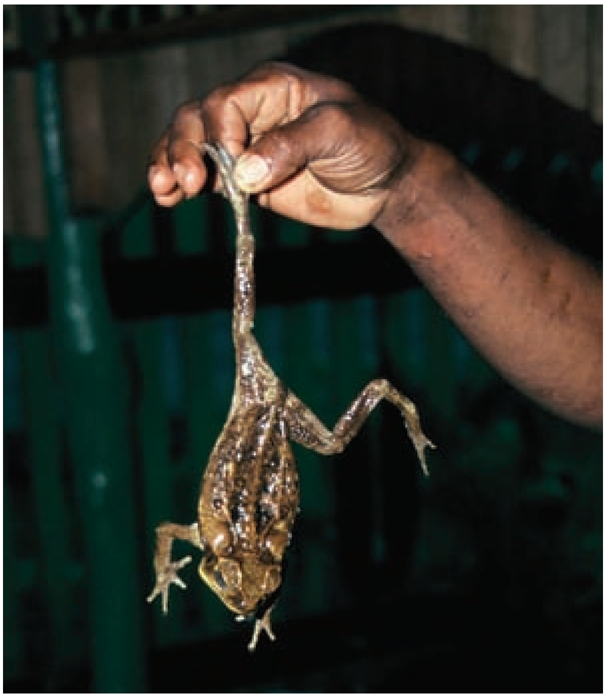

Figure 1. Cane Toad *Bufo marinus* found living under a house in the town of Kirakira on San Cristobal (Makira) Island, Solomon Islands in May 2001. The species was also observed in other localities in and around the town, with the observations probably representing a new distributional record for this invasive species in the Solomon Islands (Photo by Tom Heinsohn).

In the Solomon Islands, *B. marinus* was first introduced to the large island of Guadalcanal in February 1940, and by 1945 had also been carried to Banika (Russell Islands), Gavutu (Florida Group) and the large island of Malaita (Lever 1945; Tanner 1951; Brown 1952). According to Lever (2001, 2003) and the Invasive Species Specialist Group (2006) the contemporary distribution of *B. marinus* in the Solomon Islands includes Guadalcanal Island, Malaita Island, Russell Islands, Florida Islands and Ugi (Uki Ni Masi) Island in the main archipelago, and on Vanikoro Island in the far eastern Santa Cruz Group. Furthermore, Menzies (2006) provides no new distributional records for the species in the Solomon Islands.

Recent observations in the Solomon Islands

During May 2001, while visiting the large island of San Cristobal (Makira) at the eastern edge of the main chain of the Solomon Islands to gather information on the island's cuscus (*Phalanger orientalis*) populations, the author observed free-ranging cane toads living in and around the provincial capital Kirakira on the northern shore of that island. Figure 1 is a photo of a cane toad found living under the main guesthouse in Kirakira on 14 May 2001. Because *B. marinus* is now so widespread, initially nothing was thought of this observation, however, this year, after checking the cane toad literature, it was found that published sources including Lever (2001, 2003), Menzies (2006) and ISSG Web Site (2006) do not record its presence on San Cristobal. Thus it seemed that this represented a new distribution record and beachhead population on that large island. However, during review of the manuscript, two personal communications came to light indicating that *B. marinus* had been observed on San Cristobal (Makira) as early as the 1970s. Specifically biologists Michael McCoy and Tanya Leary (pers. comm. 2006) recalled having seen cane toads on the island in earlier decades with McCoy citing an eye witness account by a local Makira Islander who observed them there as early as the 1970s.

This indicates that despite sea barriers, *B. marinus*, probably through the agency of stowaways in vessels and cargo, has continued to expand its inter-island range in recent decades. As this toxic anuran often kills predators that naively ingest or mouth it, the ongoing spread of *B. marinus* to new landmasses in the Solomon Islands probably represents a significant threat to the biodiversity of the archipelago. In particular, snakes and varanids in parts of the Solomon Islands are reported to have declined in the wake of the advancing cane toad, while its impact as a competitor and generalist predator on a range of invertebrates and small vertebrates may also be significant (Lever 2001, 2003; ISSG 2006; McCoy 2006).

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